

## CLAIMS:

1. An abrasive flap disc comprising :  
a backing plate,

5 an annular array of flaps of abrasive material  
arranged on the backing plate and bonded thereto along  
the lowermost edge of each flap,

10 wherein each flap, at least in a radially outer  
region, is substantially spaced from each adjacent  
flap such that the flaps have freedom to flex and  
conform to an underlying surface in use.

15 2. An abrasive flap disc as claimed in claim 1,  
wherein each flap does not contact an adjacent flap at  
all.

3. An abrasive flap disc as claimed in claim 1,  
wherein each flap contacts an adjacent flap along its  
radially inner edge.

20 4. An abrasive flap disc as claimed in any preceding  
claim, wherein the angle between the backing plate and  
each flap is in the range of approximately 20° to  
approximately 90°.

25 5. An abrasive flap disc as claimed in claim 4,  
wherein the angle between the backing plate and each  
flap is in the range of approximately 40° to  
approximately 70°.

30 6. An abrasive flap disc as claimed in any preceding  
claim, wherein a centerline of each flap, which  
extends between its radially inner and outer edges, is  
substantially on a radius of the backing plate.

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7. An abrasive flap disc as claimed in claim 1 to 5, wherein the centerline of each flap, which extends between its radially inner and outer edges, is at an angle to a radius of the backing plate.

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8. An abrasive flap disc as claimed in claim 7, wherein the angle between each flap centerline and a radius of the backing plate is in the range of approximately between 5° to approximately 85°.

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9. An abrasive flap disc as claimed in claim 8, wherein the angle between each flap centerline and a radius of the backing plate is in the range of approximately between 30° to approximately 60°.

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10. An abrasive flap disc as claimed in any preceding claim, wherein the flaps comprise abrasive grit bonded to a backing material.

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11. An abrasive flap disc as claimed in any preceding claim, wherein the backing plate includes means to attach the disc to a drive mechanism.

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12. A method of producing an abrasive flap disc of the type set out in claim 1, comprising the steps of :  
providing a backing plate;  
providing an adhesive on an upper surface of the backing plate;

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rotating the backing plate incrementally;  
at each incremental step, feeding the end of a strip of abrasive material on to the adhesive on the backing plate;

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severing the end of the strip to form a flap;  
repeating the process until an annular array of flaps is formed on the backing plate with each flap

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at least in a radially outer region, being spaced from each adjacent flap;

maintaining the flaps in spaced positioned; and  
curing the adhesive to secure the flaps to the  
5 backing plate.

13. A method of producing an abrasive flap disc as claimed in claim 12, wherein after constructing the array of flaps and before curing, the method further  
10 includes the step of placing the disc in a former adapted to prevent each flap falling into substantial contact with an adjacent flap.

14. A method of producing an abrasive flap disc as claimed in claim 13, wherein the former includes a  
15 cylindrical wall dimensioned to encircle the disc and prevent each flap falling substantial contact with an adjacent flap.

15. A method of producing an abrasive flap disc as claimed in claims 13 or 14, wherein a spoke-shaped frame is placed with a spoke positioned between  
20 adjacent flaps to prevent each flap falling into substantial contact with an adjacent flap.

16. A method of producing an abrasive flap disc as claimed in any of claims 12 to 15, comprising the step of feeding the strip of abrasive material such that  
25 each flap has a centerline extending from its radially inner to outer edge which is substantially on a centerline of the backing plate.  
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17. A method of producing an abrasive flap disc as claimed in any of claims 12 to 15, comprising the step  
35 of feeding the strip of abrasive material such that

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each flap has a centerline extending from its radially inner to outer edge which is at an angle to a radius of the backing plate.

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